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OBSERVATIONS

AND

EXPERIMENTS

ON THE

Broad-leaved Willow Bark,

*ILLUSTRATED WITH CASES.*

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BY W. WHITE,

MEMBER OF THE CORPORATION OF SURGEONS, AND APOTHECARY  
TO THE BATH CITY INFIRMARY AND DISPENSARY.

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1798.

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TO THE PHYSICIANS,  
AND  
COMMITTEE OF MANAGERS

OF THE

*Bath City Infirmary and Dispensary;*

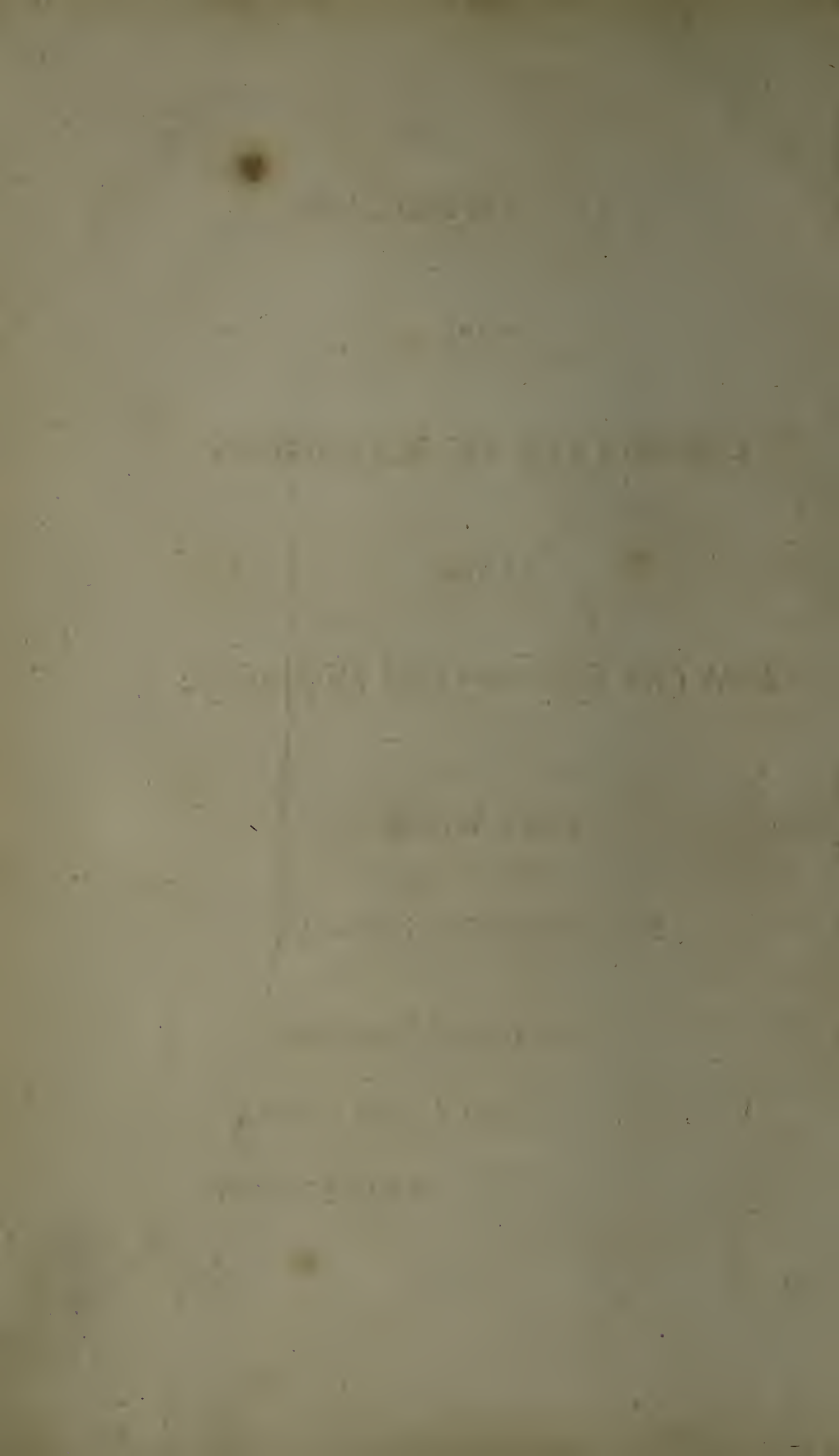
THIS WORK

Is most respectfully inscribed,

*By their most obedient,*

*and faithful Servant,*

THE AUTHOR.



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## INTRODUCTION.

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THE very great advantage which has resulted from administering a Decoction of the Broad-leaved Willow Bark for several years past, induced me to minute some of the complaints in which it has been employed; and finding the benefits attending its exhibition to be very great, a wish was excited that the virtues of so excellent a Bark might be more extensively known. With that view the following (though very imperfect) attempt is made to elucidate more fully its sensible qualities, and effects on the living body; hoping that Practitioners may be induced to make further trial of an article, which appears to be as valuable as any of the Materia Medica.

Notwithstanding this bark has been already strongly recommended to the attention of the public by Mr. James, in a pamphlet which he published a few years ago, its use has not yet become general. This, however, is not singular, since every new Medicine has always met with more or less of opposition at the beginning, and none more so than the Cinchona, for which the present is proposed as a substitute.

As this bark is so easily got, every practitioner may have an opportunity of fully proving its efficacy and worth. “But,” (as Mr. James very justly observes) “it seems  
 “to be the lot of human nature to overlook  
 “the merits of what is easily procured, and  
 “costs but little, and to be captivated with  
 “a commodity which can only be acquired  
 “with difficulty and expence. Thus we go  
 “to the western extremity of South America  
 “for a remedy of disorders for which we  
 “have

“ have a better at home, and send annually  
 “ out of the kingdom a considerable sum of  
 “ money to purchase a bark, when we have  
 “ a tree in our fields which offers us one of  
 “ equal, if not superior virtue, and which  
 “ may be cultivated almost without trouble  
 “ or cost.”

Since the introduction of this bark into  
 practice at the Bath City Infirmary and Dis-  
 pensary, as a substitute for the Cinchona,  
 not less than twenty pounds a-year have  
 been saved to the Charity, which circum-  
 stance will render it a very valuable ar-  
 ticle to all Hospitals where much bark is  
 used.

I must beg leave to acknowledge my ob-  
 ligations to the Physicians who honour the  
 Charity with their attendance, and parti-  
 cularly to Dr. Gibbes, for his kind assis-  
 tance in the arrangement, and experimental

part of this work, and who, with the other Physicians, have witnessed the good effects of this bark in the extensive practice at the Infirmary.



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THE  
BOTANICAL DESCRIPTION.

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S A L I X.

DICÆCIA. DIANDRIA.

MASC. Amenti Squamæ. Cor. O. Glandula baseos nectifera.

FEM. Amenti Squamæ. Cor. O. Stylus bifidus. Caps. unilocularis bivalvis. Semina papposa.

\*\*\*\* Foliis subferratis villosis.

Salix Caprea.

Foliis ellipticis subferratis rugosis, supra villosis subtus tomentosis.

Salix latifolia rotunda. *Raii Syn.* 449.

Salix foliis ovatis rugosis subtus tomentosis undatis superne denticulatis. *Linn.*

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Dr. Withering observes, much remains to be done to clear up the species and varieties of *Salix*, which this island produces; the genus, therefore, (he says) has a claim upon the particular attention of such as wish to improve the Botanical knowledge of their Country.

The broad-leaved Willow is to be met with in the woods, and hedges of hilly situations, growing to a pretty large bushy tree. Although some botanical writers enumerate as many as thirty different species and varieties of Willow, yet this sort is easily distinguished by the shape of the leaves, which is resembled by none of the other species, (at least that I can find) except the bay-leaved; but that again is soon distinguished from the former by the leaves being smooth and shining, instead of the downy appearance, particularly on the under surface of the *Salix Caprea* already described.

*Its sensible Qualities.*

This bark discovers to the taste a considerable degree of astringency, accompanied with a slight bitterness. A decoction of it  
is

is of a bright red colour, resembling a decoction of Swietenia bark, but which is more astringent to the taste than either that bark or the Cinchona flava; yet it is very much inferior to them both as to its bitter quality\*.

*Preparation, and manner of exhibiting it.*

This bark readily yields its qualities to water in decoction, or infusion, but most of all to rectified spirit; the latter being capable of extracting a much greater proportion of its active principles than water: which will be more fully shewn hereafter.

It has been always used in the form of decoction, except in a few cases where the powder has been given.

*The following is the form:*

Take of broad-leaved willow bark two ounces.

Pimento one drachm.

To be boiled in two pints of water down to one pint.

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\* Although the Willow decoction is more astringent to the taste than the Swietenia, yet when examined by means of a few drops of a solution of the Sulphate of Iron, it strikes as dark a colour.

The common dose is two table-spoonfuls three or four times a day; and in some cases, as Intermittents, &c. it is necessary to give it every three hours, in the dose of one or two ounces.

It may be proper to remark respecting the decoction, that in the course of two or three days a brownish precipitate takes place, and that it does not keep longer than that period fit for use, except in cold weather.



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## EXPERIMENTS.

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### *Experiment the First.*

A Few drops of a saturated solution of sulphate of iron were added to a decoction of the broad-leaved willow bark, which was presently changed to an inky blackness. On standing a few days it retained its uniform black appearance, shewing but little tendency to precipitation.

### *Experiment the Second.*

On adding the same number of drops of the above solution to an equal quantity of yellow bark decoction, it only assumed a lead colour, and, on standing, there was a copious precipitation, and the superincumbent liquor still appeared turbid.

### *Experiment the Third.*

One grain of sulphate of iron was added to one ounce of the willow decoction, which  
soon

soon assumed the inky appearance as in the first experiment. Thirty drops of the diluted sulphuric acid restored it to its original colour; eighty drops of the Aq. Ammon. re-produced its former blackness.

*Experiment the Fourth.*

A vial was filled with the decoction of willow bark, and kept thirteen days; at the same time another vial was filled with a decoction of yellow bark, and preserved an equal number of days at the same temperature. At the expiration of that period both decoctions were examined: the yellow bark decoction was become of a paler colour, with a lateritious sediment; it retained a considerable degree of bitterness, though accompanied with a disagreeable flavour. The willow decoction was likewise paler, having lost its bright red colour, and nearly its astringent taste. On the surface there appeared some brownish flocculi, and there was a considerable precipitation of a brown colour.

On adding a few drops of the solution of the sulphate of iron to each of the decoctions,

tions, no change of colour took place till they had remained some time, when they assumed a dark appearance. The change was first observed in the yellow bark decoction, which was also darker than the willow.

Although in the first instance the willow bark shews greater signs of astringency than the yellow bark, yet does the latter appear by this experiment to retain its astringent principle the longest, and to resist decomposition longer than the willow bark.

*Experiment the Fifth.*

To five ounces of the willow decoction was added one ounce of an infusion of Quassia. The mixture, after standing fifteen days, retained its bright red colour. There was a brown deposit, and at the top it appeared a little mouldy. It tasted bitter and astringent, (though in a less degree than at first) and was much sounder than, as in the former experiment, when made with the decoction alone; for, on the addition of a few drops of the solution of the sulphate of iron, it struck as dark a colour as with a decoction when fresh boiled.

*Ex-*

*Experiment the Sixth.*

Two ounces of infusion of Quassia were added to four ounces of willow decoction, and kept twenty-two days, without appearing to have undergone any sensible change, except a brownish precipitation; possessing nearly the same degree of bitterness and astringency as at first.

From the two last experiments the antiseptic quality of the Quassia is very obvious; and in some cases the combination of the willow with the former may be attended with considerable advantage, and which, I think, promises to answer all the intentions of the Cinchona flava, in diseases of a malignant nature, where that bark has been given with so much success.

*Experiment the Seventh.*

Three pieces of the lean of fresh beef were suspended in three vials, being previously filled with decoctions of yellow, willow bark, and camomile flowers, (to the latter a little mucilage was added), at the expiration of fifteen days each was examined; that which was preserved in the yellow bark decoction appeared

appeared soft and whitish on the fibres being separated. It was not accompanied with any disagreeable smell. That in the camomile decoction exhibited a similar appearance as the preceding. The other piece preserved in the willow bark decoction was of a reddish colour, and firm; smelled strongly of the decoction, attended with a slight disagreeable flavour.

*Experiment the Eighth.*

Some lime-water was added to a decoction of willow bark, which instantly became turbid. On standing, it yielded a light brownish coloured precipitate, the decoction again assuming a deep bright red colour, though less astringent to the taste. On the addition of a few drops of the solution of the sulphate of iron, it became as black as when added to a simple decoction.

*Experiment the Ninth.*

Some lime-water was also added to a decoction of yellow bark, when it immediately assumed a curdled appearance of a light colour. On standing, a very copious deposition

sition took place. The superincumbent liquor appeared paler than it was before the addition of the lime-water, with a slight reddish tinge at the top. The bitter and astringent taste of the bark were nearly concealed. The addition of a few drops of the above solution however caused a decomposition as suddenly as when added to a simple decoction, and equally as dark, with a copious precipitation.

*Experiment the Tenth.*

Two drachms of willow bark in fine powder were triturated for a considerable time, and made into an infusion by the gradual addition of three ounces of lime-water; which when filtered, (after standing some time) and a vial filled with it, weighed four grains more than the same vial when filled with lime-water only.

Lime-water does not appear to increase the solubility of the willow bark, for an infusion was prepared in a similar manner as the preceding, with common water; the same vial being filled with the filtered liquor, weighed five grains more, than when filled with

with water; the latter having dissolved one grain more than the lime-water.

*Experiment the Eleventh.*

Two drachms of willow-bark in powder were triturated with one drachm of quick-lime near half an hour, to which were gradually added four ounces of common water; the mixture exactly resembled the red bark in colour. After standing some time and then filtered, it was of a pale colour, having a slight reddish tinge, but tasted so strong of the lime as entirely to conceal the taste of the bark, and the addition of a few drops of the solution of the sulphate of iron produced no change of colour: a new compound being evidently formed.

*Experiment the Twelfth.*

One drachm of common magnesia, and the same quantity of willow bark in powder, were triturated together for some time, and made into an infusion by the gradual addition of four ounces of water. After standing all night, and then filtered, the liquor appeared of a bright reddish colour; but  
scarce

scarcely discovered any astringency to the taste. On the addition of a few drops of the solution of the sulphate of iron it became of a very dark-red colour.

An infusion was prepared in a similar manner as the preceding with yellow bark and magnesia. The liquor, when filtered, resembled in colour the willow infusion, the magnesia having produced the same effect in diminishing both the bitter, and the astringent qualities of the bark, exactly as described by Dr. Babington in his experiments on the yellow bark.

From several of the foregoing experiments, we may readily perceive a great similarity between the effects produced by magnesia and lime on the yellow and willow bark: which differ materially from the effects these substances produce on the common and red bark. For we find by the experiments of Dr. Skeete, which no doubt were made with great accuracy, that lime-water and magnesia occasion an augmentation of the sensible properties of common bark, whilst on the red, they produce no sensible change whatever.

Dr.

Dr. Babington thinks it is obvious, that whatever be the nature of the bitterness, and astringency of bark considered as separate principles, they vary in different species, not only with regard to their proportions, but also in their mode of combination.

It may however be remarked, that if willow bark is made into an infusion with lime-water; or if magnesia is rubbed with the willow, previous to the addition of common water: (or added to a decoction of the willow) in both cases, the addition of these substances preserves the infusions several days longer sound than if none were added.

*Experiment the Thirteenth.*

To one ounce of the willow bark in coarse powder were added eight ounces of proof spirit, and after standing nine days the tincture was filtered. A vial filled with it weighed three grains more than the same vial, when filled with a tincture of yellow bark, prepared in a similar manner.

*Experiment the Fourteenth.*

Two drachms of willow bark in powder  
C were

were added to four ounces of rectified spirit of wine, which was suffered to stand about thirty-six hours : (the vial being frequently shook during that time), the clear liquor was then carefully poured off, and a vial, containing about seven drachms by measure, was filled with it, which weighed nine grains more than when filled with rectified spirit alone.

*Experiment the Fifteenth.*

Two drachms of willow bark in powder, and four ounces of proof spirit, were mixed together, and managed in the same manner as in the preceding experiment. The vial, when filled with the clear liquor, weighed three grains more than when filled with proof spirit only.

*Experiment the Sixteenth.*

A similar mixture was also made with willow bark powder, and simple water. The vial, when filled with the clear liquor, weighed five grains and a half more than an equal measure of the water by itself.

From the three last experiments, (which  
were

repeated different times) there seems to me a further proof “ that the attraction between “ the water and spirit is so great, as to weaken the attraction of the former for the “ mucilaginous parts of the bark, and that “ of the latter, or spirit, for its more resinous “ particles. And also that the mucilaginous “ parts of the bark are so intimately blended “ with the resinous, that the spirit extracts a “ part of the former as well as the latter.”

It is very remarkable, that notwithstanding this bark contains a very great quantity of resinous material, a tincture of it, made with rectified spirit, bears to be mixed with water in any proportion, without the least decomposition taking place.

*Experiment the Seventeenth.*

Two drachms of willow bark in powder, were mixed with four ounces of water, which was suffered to stand about two days : (the vial being frequently shook) the clear liquor was then poured off, and fresh water added : the affusion being repeated a great number of times, until the water remained insipid to

the taste, and colourless on the addition of a few drops of the solution of the sulphate of iron.

Two ounces of rectified spirit of wine were then added to the residuum; after standing some time, a few drops of the same solution were added to the clear liquor, when it presently assumed a dark colour, with a considerable precipitate.

*Experiment the Eighteenth.*

Two drachms of willow bark in powder, were mixed with four ounces of rectified spirit of wine, which stood six days; the clear liquor was then poured off, and fresh added, different times, until it remained colourless on the addition of the solution of the sulphate of iron.

Two ounces of water were then added to the residuum; after standing some time, a few drops of the solution were added to the clear liquor, which produced no change.

Thus we find that rectified spirit is capable of extracting all the astringency of this bark, whilst water is not.

Having

Having thus given a view of the chemical properties of the Willow Bark, I now proceed to relate those CASES wherein its beneficial effects appeared the most decided.

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*Case the First.*

*Feb. 22d.* Jos. Purnell, aged about thirty years; was seized with a Tertian Ague about a fortnight ago. In consequence of his having taken some medicine the cold fit is stopped, (which he has missed thrice) but the hot paroxysm continues to recur at the usual time, and as violent as when accompanied with the cold stage.

Sumat Decoction. Salicis Latifol. ʒj 4ter die.

*25th.* Has had no hot fit since he begun the decoction.

Repet. Decoctionum Salic.

*March 3d.* Has had no return either of the cold or hot fit, therefore discontinued the decoction.

*Case the Second.*

*May 24<sup>th</sup>.* Ann Milfom, aged about four years; has had a Quotidian Ague seven weeks, in consequence of which her strength is very much reduced.

Pulv. Ipecac. gr. viij. Vesper. sumend.

Sumat. Decoct. Salic ʒss ʒtia. quaq. hora.

*31<sup>st</sup>.* Two days after she begun the decoction the ague left her.

Repet. Decoct.

*June 5<sup>th</sup>.* The ague has returned as violent as at first, but she has not taken the decoction regular since the last report. Rather costive, and belly large.

R. Pulv. Rhubarb gr. xij.

Kali Tartar gr. xv. f. pulv. mane sumend.

Sumat. Decoct. Salic ʒj tertia quaq. hora.

*7<sup>th</sup>.* Has had no return of the ague since she begun the decoction again. Has a very troublesome cough.

Repet. Decoct.

Sumat. Syr. Papav. alb. ʒj omn. nocte.

*19<sup>th</sup>.* Has had no return of the ague, and the cough is much abated.

Repet. Syr. Papav. alb.

And

And also desired she might continue the decoction a while longer to prevent a return.

*Case the Third.*

*July 22d.* Frances Heath, aged about twenty years; for several days past she has had hot flushings, which come on regularly about noon: they are not preceded by any sense of coldness, nor attended with any other particular febrile symptom. Some time past she had laboured under chlorosis, but the catamenia have appeared in a regular manner. Appetite good, belly natural.

Sumat. Decoct. Salicis ʒj 4ta. quaq. hora.

*25th.* The hot flushings are not so violent.

Repet. Decoctum.

*28th.* The hot flushings are considerably abated. Bowels costive.

R Pulv. Rhabarb gr. xv.

Kali Tartar ʒss. f. pulv. mane sumend.

Repet. Decoctum.

*August 10th.* The hot flushings have entirely left her. Complains of having a slight

pain in her stomach. It being near the menstrual period, she discontinued the decoction. Had no return of the complaint.

*Case the Fourth.*

*June 11th.* Geo. Longford, about fourteen years of age; complains of pain of his head and bowels, attended with vomiting and diarrhœa. Quick pulse, skin hot, thirst, tongue white. He has been ill about three days.

R Pulv. Ipecac. gr. xv. Vesper sumend.

R Pulv. Rhubarb gr. xij.

Kali Tartar ʒi f. pulv. mane sumend.

And also a saline cordial draught, to be taken every four hours.

*16th.* The vomiting and diarrhœa are abated, but still complains of head-ach and chilliness; the latter comes on every day about noon, and continues some hours, after which a considerable heat supervenes.

Sumat. Decoct. Salicis ʒj; 4ta. quaq. hora.

*18th.* The chilliness has not been so violent since he begun the decoction.

Repet.

Repet. Decoctum Salicis.

21<sup>st</sup>. The chilliness has entirely left him. He is gaining strength, and his appetite mends. Still complains of a trifling head-ach.

Repet. Decoctum.

In a short time he perfectly recovered.

### *Case the Fifth.*

William Pike, upwards of forty years of age; after a violent attack of febrile symptoms, accompanied with a cough, pain of the breast, and dyspnœa; (which were relieved by saline and antimonial medicines, &c.) he complained of an inward heat, and felt (as he expressed it) as if fire was coming out of his mouth; which sensation commonly returned twice in the twenty-four hours, continued some time, and was very troublesome. He had no pain, and his appetite was now tolerable good. Bowels were costive, to obviate which he took some laxative electuary occasionally. He was likewise directed to take

two

two spoonfuls of yellow bark decoction, four times a-day; which he continued a few days without finding any relief. He was then directed to take the same quantity of willow bark decoction, four times a-day, instead of the decoction of yellow bark; and in the course of two days after he begun the willow, the heat was considerably abated; although he had slight returns of it at the usual time. He continued the decoction about a week longer, when he was perfectly free from complaint.

*Case the Sixth.*

*Feb. 17th.* John Eades, upwards of forty years of age; complains of a great inward heat, (as he expresses it) which is most violent at night, attended with considerable thirst. He does not perspire any. Has four or five stools in the day; and is obliged to make water as soon as he drinks any thing. Pulse quick, tongue white; is much reduced in strength. The above symptoms have been gradually increasing between three and four months.

R De-

R Decoct. Salic. ℥ss.

Tinct. Catechu. ʒij. m. Sumat. Coch. ij.  
ter. die.

20th. Much the same, except that the diarrhoea is rather better.

Repet. Decoctum.

R Pulv. Ipecac.

Opii aa gr. i. f. pil. omn. nocte sumend.

23d. Feels himself much better. The heat and thirst are considerably abated, and does not make water so suddenly after drinking.

Repet. Decoct. et Pilul.

26th. Continues mending.

Repet. Med.

April 22d. For some time felt himself much better, but being obliged to work in the gardens, and the weather rather severe; exposed him to repeated colds. He therefore had a recurrence of the same symptoms for which he at first applied: except that he made his water quite natural. Had a trifling cough.

Sumat. Decoct. Salic. ʒj 4ta. quaq. hora.

R. Pulv. Rhubarb gr. xv.

Kali Tart. ʒss m. f. pulv. mane sumend.

Pil.

Pil. Opiat. gr. i. omn. nocte sumend.

26<sup>th</sup>. His bowels are more regular, and is not so hot at night.

Repet. Decoct. et Pil. Opiat.

He continued the decoction some time, but without any further benefit being derived from it. He went into the country, and remained nearly in the same situation during the summer; but, on the approach of winter, his complaints (without any other means being used) went entirely off; he gained his strength, and was able to follow his business throughout the winter as usual.

### *Case the Seventh.*

Oct. 12<sup>th</sup>. A. Nott, aged about forty years; complains of pain of her head, deafness, and general debility. Pulse quick, tongue tolerable clean and moist. Has a febrile accession every day, succeeded by perspiration. At the beginning of the attack, which was about three weeks ago, she had a vomiting and diarrhœa, but both have ceased some time.

Sumat.

Sumat. Pulv. Cort. Salicis ʒ℥s 4ta. quaq.  
hora.

14<sup>th</sup>. Is rather better.

Repet. Pulver.

15<sup>th</sup>. The febrile accession and sweating  
are much abated.

Repet. Pulv.

16<sup>th</sup>. Much the same.

Repet. Pulv.

17<sup>th</sup>. Feels herself much better, and her  
strength increases. Bowels costive.

Sumat. Haust. Purg. cras mane.

Repet. Pulv.

20<sup>th</sup>. Discharged, cured.

### *Case the Eighth.*

October 1<sup>st</sup>. J. Debank, aged 6 years ; was  
seized about a fortnight ago with a violent  
pain of her head, and back ; sickness, thirst,  
thick fur on the tongue, skin hot, pulse  
quick, belly regular. Has taken an eme-  
tic, and the saline draughts in the effer-  
vescing state. Also had a blister applied  
between the shoulders.

She is now free from pain, tongue tolera-  
bly

bly clean, and skin not so hot. Pulse is still quick; and she has a feverish accession every evening about six o'clock.

Sumat Decoct. Salic. ʒss 4ta. quaq. hora.

*Oct. 7th.* The hot paroxysm recurs, but not so violent; her appetite is considerably mended, and is gaining strength.

Repet Decoctum.

*10th.* The recurrence of the febrile accession is scarcely perceivable, and then not until morning. Her appetite is very good, and gains strength.

Repet Decoctum.

*19th.* Has been quite well for several days.

Discharged cured.

### *Case the Ninth.*

*Nov. 4th.* William Golefney, aged about thirty years; of a common sanguine temperament: was seized about ten weeks ago, with chilliness, which was soon followed by vomiting and diarrhœa; and sometimes his stools were mixed with blood. The vomiting has ceased for some time; but  
the

the diarrhœa continued till about a week ago. He now complains of a feverish accession which comes on every night at ten o'clock; it is neither preceded by any sense of coldness, nor followed by any perspiration. Has considerable thirst, tongue clean, pulse small and quick.

Sumat Decoct. Salic. ʒj 4ta. quaq. hora.

*Nov. 8th.* The hot paroxysm does not return till between five and six o'clock in the morning; and then very slight. His appetite is considerably mended, and feels (as he expresses it) stronger in his inside. Has no return of the diarrhœa.

Repet Decoctum.

*22d.* A few days ago he had a slight return of the diarrhœa, when he took a few grains of rhubarb and calomel: since which, the diarrhœa has entirely left him. Feels quite strong, and has not had the least return of the hot fit for three or four days.

Repet Decoctum.

In a few days he was discharged cured.

*Case*

*Case the Tenth.*

*Oct. 6th.* Sarah Fudge, aged thirty-six ; was seized five days ago, with a pain of her head and back. She is often very chilly in the course of the day, which is succeeded by hot flushings and perspiration. Her appetite is bad, but has no sickness : tongue tolerably clean, pulse quick, skin rather hot, thirsty, belly regular.

Sumat Decoct. Salic. ʒj 4ta quaq. hora.

*Oct. 7th.* Complains of having much pain of her back.

Repet Decoctum.

Sumat Pil. Opiat. gr.j omn. nocte.

*9th.* Pain of her head and back, are much better ; and does not feel so chilly. The hot flushings and perspiration continue nearly the same.

Repet Decoct. et Pilul.

*11th.* Is still better.

Repet Decoctum.

*13th.* She is entirely free from pain ; the chilliness has left her : the hot flushings and perspiration are considerably abated.

ed. Feels stronger; appetite better; skin cool; pulse weak, but not in the least quick.

Repet. Decoctum.

17<sup>th</sup>. Feels no complaint, but debility.

Repet. Decoct.

19<sup>th</sup>. Is gaining strength.

Repet. Med.

28<sup>th</sup>. Quite recovered.

*Case the Eleventh.*

June 3<sup>rd</sup>. Martha Comber, aged about forty; complains of having had for several weeks past chilly fits, which come on frequently in the course of the day; (but at no regular time) which are attended with other slight febrile symptoms; and is often sick. Bowels costive.

R Pulv. Ipecac. ʒj. Vesper sumend.

R Pulv. Rhubarb. grs. xv.

Kali Tartar. ʒss m. f. pulv. cras mane sumend.

R Mist. Salin. ʒss.

Confec. Aromat. ʒij. m. Sumat Coch. ji.  
4<sup>ter</sup> die.

D

10<sup>th</sup>.

10th. The sickness is abated; but the return of the chilliness is still as frequent as before.

Sumat. Decoct. Salic. ʒj 4ta. quaq. hora.

17th. The chilly fits are neither so violent nor so frequent, and feels herself much stronger.

Repet. Decoctum.

In a short time she recovered her health and strength.

*Case the Twelfth.*

October 12th. A. Lane, aged about thirty years; complains of pain of her back, weakness, giddiness, and diarrhœa; the latter is somewhat abated to-day. She has been ill about three weeks; and was at first attacked with common febrile symptoms, of which there is now a considerable remission.

Sumat. Pulv. Cort. Salicis latifol. ʒj 4ter die.

13th. Feels herself rather better. The diarrhœa has entirely ceased.

Repet. Pulv.

16th. Continues mending. No return of the diarrhœa.

Repet.

Repet. Pulv.

27th. Discharged cured.

*Case the Thirteenth.*

October 13th. A. Marsh, aged about thirty-five years; of a muscular sanguine temperament, complains of pain of his head, thirst, tongue white, pulse quick, skin hot, belly regular. He was attacked about a week ago with shivering and head-ach.

Sumat. Haust. Salin. cum Vin. Antim. 4ta. quaq. hora.

14th. Feverish symptoms rather abated, and he is not so much in pain.

Sumat. Pulv. Cort. Salic. 3ss 4ta. quaq. hora.

Omitt. Haust. Salin.

15th. He is nearly free from pain, pulse natural, tongue clean.

Repet. Pulv.

17th. Continues getting better. Bowels costive.

Sumat. Haust. purg. cras mane.

Repet. Pulv.

24th. Has a return of febrile symptoms

to-day, after being a week entirely free from them.

R Pulv. Antimon. gr. ij.

—— Contrayer comp. gr. x. f. pulv.

Sumat. i. 4ta. quaq. hora.

Omitt. Pulv. Cort. Salic.

25<sup>th</sup>. Complains of violent pain of his head, with an appearance of delirium coming on.

Applic. Empl. Canth. pone aures.

Sumat. Hauft. Salin. 4ta. quaq. hor.

27<sup>th</sup>. His head is considerably relieved; and there is also a remission of febrile symptoms again: great debility.

Sumat. Pulv. Cort. Salic. ut prius.

Omitt. Hauft. Salin.

In a few days he recovered his strength, and was discharged cured.

### *Case the Fourteenth.*

Jan. 31<sup>st</sup>. Mary Mason, aged about thirty years; of a delicate constitution: complained of having frequently chilly fits in the course of the day, succeeded by hot flushings; which were attended with a state of  
gene-

general debility, and loss of appetite. Very lately recovered from a severe attack of low fever.

Sumat. Decoct. Salicis ʒj ter. die.

*Feb. 7th.* The chilly fits have entirely left her, feels herself stronger, and her appetite is considerably mended.

Repet. Decoctum.

*17th.* She is perfectly recovered.

*Case the Fifteenth.*

*June 12th.* Sarah Dowson, about forty years ; complains of general weakness, loss of appetite, and of being often chilly in the course of the day : which is attended with other slight febrile symptoms. Belly regular. She has felt herself in this situation several weeks past.

R Mist. Salin. ʒviij.

Vin. Antimon. g<sup>ss</sup>. 60. m. Sumat. coch. ij. ter. die.

*19th.* She is much the same as last. Bowels not sufficiently open.

Repet. Mistur.

And a laxative to be taken in the morning.

26th. Feels herself no better.

Sumat. Decoct. Salicis ʒj 4ter die.

29th. She is not so chilly, her appetite is rather better, and feels somewhat stronger.

Repet. Decoctum.

July 2d. Is much better. The catamenia have appeared.

Omitt. Decoctum.

5th. Catamenia have ceased. Continues mending.

Repet. Decoctum.

29th. Discharged cured.

*Case the Sixteenth.*

May 5th. James Blower, aged about thirty-six years; for some time past has felt a general weakness, and trembling: also two or three times a-day a sweating comes on. His appetite is very much impaired; and complains of being troubled with wind in his stomach. Belly regular. His face has rather an œdematous appearance. Was very ill about a year ago with anasarca, from which he perfectly recovered.

R Decoct. Salicis ʒss.

Tinct.

Tinct. Aromat. ʒij m. Sumat. Coch. ij. ter.  
die.

12th. Feels himself free from complaint;  
but has not quite recovered his strength.

Repet. Decoctum.

In a short time he was perfectly restored  
to health.

*Case the Seventeenth.*

May 10th. Jane Collins, aged about forty  
years; complains of having had, for some  
time past, pains of the lower extremities,  
attended with frequent irregular returns of  
chilly fits; and last night she had a complete  
shivering fit, as in the ague. Complains also  
of sickness and thirst, tongue white, pulse  
quick, belly regular.

Sumat. Pulv. Ipecac. ʒj Vesper.

& Decoct. Cort. Salic. ʒxij.

Pulv. Cort. Salic. ʒij.

Tinct. Serpent ʒss m. Sumat. Coch. ij 4ter  
die.

17th. She is rather better, but has not tak-  
en the mixture regularly. Has had two cold  
fits since, and more or less of fever every

day, which does not recur at any particular time. Bowels have been too open since she begun the decoction. She was directed to take three table-spoonfuls of the decoction every three hours without the powder.

20<sup>th</sup>. Has had neither cold nor hot fit since the last report, till to-day, when she had a cold fit, which was followed by perspiration. Diarrhœa has ceased.

Repet. Decoctionum.

24<sup>th</sup>. Has had one hot fit, without being preceded by any coldness. Feels herself stronger, and her appetite is considerably mended.

Repet. Decoctionum.

27<sup>th</sup>. She has had neither cold nor hot fit since the 24<sup>th</sup>, and is still gaining strength.

Repet. Decoctionum.

June 3<sup>d</sup>. Continues mending. The medicine gives her such an appetite, that she can scarce get food enough to satisfy it.

Repet. Decoctionum.

She left off attending, but afterwards saw her when she appeared to be very well.

*Case the Eighteenth.*

Sarah Thomas, aged 7 years: had been for several weeks afflicted, with a scrofulous eruption on her face; and likewise one of her legs was superficially ulcerated in different parts. She had taken calomel in small doses for a considerable time, without any apparent benefit: rather the contrary, as the general state of her health was worse, and her appetite much impaired. The ulcerations of her leg also shewing a disposition to spread.

The decoction of the broad-leaved willow bark was now prescribed for her, of which she took a table-spoonful three times a-day. A little extract of liquorice was dissolved in the decoction to make it more agreeable.

After pursuing this plan a few weeks, she perfectly recovered her appetite and strength. The eruption on her face entirely disappeared, and the ulcerations of her leg healed.

*Case the Nineteenth.*

*Feb. 6th.* Mary Nutt, aged three years and a half; of a very delicate habit. After  
the

the small-pox which she had in the natural way, and also very numerous; Several scrofulous tumours appeared in different parts of her body, some of which broke. She was very weak, and had very little appetite. She had taken a few doses of calomel and rhubarb.

Sumat Decoct. Salicis ʒss ter. die.

10<sup>th</sup>. She is much the same, except that her appetite is rather better.

Repet. Decoctum.

16<sup>th</sup>. Has a very troublesome cough, in other respects much the same as last. The decoction was omitted, and a mucilaginous mixture ordered on account of the cough.

22<sup>d</sup>. The cough is much abated, still continues very weak.

Repet. Decoctum Salic.

March 3<sup>d</sup>. She gains strength, and there is very little discharge from the fores.

11<sup>th</sup>. She appears to be nearly well.

Repet. Decoctum.

In a short time she perfectly recovered her health and strength.

*Case the Twentieth.*

Nov. 3<sup>d</sup>. Elizabeth Newland, aged forty;  
for

for several months past she has had a slight Prolapsus Uteri, and Fluor Albus, with pain of the back. The prolapsus has been much worse about three weeks, in consequence of a cough, which she has had some time. Her appetite is good, belly regular.

Sumat Decoct. Salic. ʒj. ter. die, et Pil.  
Opiat. gr. j. omn. nocte.

8th. Prolapsus is not so troublesome, the discharge is less, and the cough is also better.

Repet. Decoctum, et Pil. Opiat.

21st. Feels herself entirely free from the discharge; has not the least appearance of the prolapsus; and has no complaint whatever.

Discharged, cured.

*Case the Twenty-first.*

March 28th. Sarah Hulance, aged about fifty years; for some years she has been troubled with a Prolapsus Uteri, which becomes still more troublesome; accompanied with Fluor Albus, considerable pain of the back, and general weakness. A Pessary was proposed to her, but as she objected to wearing it, the following was prescribed.

R De-

R Decoct. Salicis ℥ss.

Tinct. Catechu. zij. m. Sumat Coch. ij. ter die.

Sumat Pil. Opiat. gr. j. omn. nocte.

*April 26th.* She has continued the decoction regular since the twenty-eighth of last month; feels herself much stronger, the discharge is less and thicker. The uterus does not descend so low as before.

Repet. Decoct. et Pil. Opiat.

Desired her likewise to use the decoction as an injection, two or three times a-day.

*May 17th.* The prolapsus is very little trouble to her, has no discharge, and feels herself better than she has been for some years.

Repet. Decoctum.

*June 10th.* Discharged, cured.

### *Case the Twenty-second.*

*April 9th.* S. F. a married woman, aged about thirty years; has been for a considerable time past troubled with Fluor Albus, and pain of the back. Formerly she had had venereal symptoms; on which account  
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it was judged proper for her to take a weak mercurial preparation: which she continued some time, and likewise used an astringent injection. Finding that she got very little better with this plan, the mercury was left off. She persevered in the use of a strong vitriolic injection some time longer, and also took an opiate pill at night, as she was still in pain. Notwithstanding the discharge continued, (though not quite so much as at first) and felt herself rather weaker.

She was now directed to take two table-spoonfuls of the willow decoction four times a-day, and to continue the injection.

26th. Feels herself stronger, and the discharge is considerably lessened.

Repet. Decoct. et inject.

May 10th. Continues mending.

Repet. Decoctum.

20th. Feels perfectly well.

### *Case the Twenty-third.*

May 10th. Ann Tiley, aged about forty years; complains of a general weakness, and loss of appetite, Has had a Prolapsus Uteri some time, and which is now become  
fo

so very troublesome as to render her almost incapable of doing any thing. Belly regular.

Sumat Decoct. Salicis, ʒj. 4ter. die.

13th. She is much the same, except that her appetite is rather better.

Repet. Decoctum.

18th. Feels herself stronger. Her appetite is considerably mended; and the prolapsus is less troublesome.

Repet. Decoctum.

27th. Continues mending in every respect.

Repet. Decoctum.

June 13th. She is still better, but has not taken the decoction regularly.

Repet. Decoctum.

She did not attend again, but have no doubt as to her getting well.

### *Case the Twenty-fourth.*

Feb. 15th. Jane Smith, aged about thirty years; who was very much afflicted with the rheumatism in the lower extremities; so that she was scarce able to move. Also with fluxus albus, pain, and weakness of the back.

Sumat Decoct. Salic. ʒj. ter. die.

She

She was likewise ordered the warm bath, and to take an opiate pill at night.

20<sup>th</sup>. Feels herself stronger: the discharge is less.

Repet. Decoct. 4<sup>ter</sup> die sumend.

Cont'. Baln. et Pil. Opiat.

March 11<sup>th</sup>. Has very little discharge, and gains strength.

Repet. Decoct. &c.

15<sup>th</sup>. Continues mending.

Repet. Remed.

April 22<sup>d</sup>. Her rheumatic complaint is not entirely removed, but in other respects she feels herself well.

A Young Lady of my acquaintance, had been for a considerable length of time troubled with violent spasms of the stomach: the recurrence of which were so frequent, and severe, that she was reduced to a state of very great debility, and almost total loss of appetite. Camphor, Æther, Opium, Steel, &c. were prescribed; which only afforded her a temporary relief. She was advised by an eminent Physician in London to make trial of the Bath Waters, which she drank about six weeks, and also bathed, but felt very little benefit from either. I recommended to her the willow decoction; (to half a pint of the decoction, two drachms of Spirit. Æther. Vitriol. comp. were added), an ounce to be taken three or four times a-day. In a few days there was an amendment in her appetite, and in a short time it became quite natural; and her stomach capable of digesting any kind of food. The spasms likewise gradually decreased in violence, and frequency; which have entirely left her for several months. After taking the decoction, she drank the waters again; and I believe with great advantage, as she is restored to a considerable degree of health and strength.

*Its*

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*Its Medical Properties.*

IT is a fact with which Practitioners are well acquainted, that the exhibition of the Cinchona, is frequently attended with a derangement of the stomach and bowels; sometimes occasioning in the former, a sense of weight and oppression, while in the latter, inducing either a state of costiveness, or a troublesome diarrhœa: hence recourse is often had to aromatics, opium, &c. to aid its operation.

I have to say in favour of the willow, that except in a single instance, (which may be noticed in the case of Collins) I never found it to disagree with the stomach, or bowels. For it has sometimes been administered immediately on the ceasing of a diarrhœa, without occasioning the least recurrence of the complaint: and some cases attended with diarrhœa have been checked by it. Neither do I recollect an instance of any complaint being made of its occasioning the least sense of weight, or oppression at the stomach.

When

When the sensible effects of this bark on the system, are further compared with those produced by the cinchona ; it appears (from numerous trials) to be very little inferior in efficacy to the latter. The only circumstance in which its inferiority appears to consist, is its antiseptic quality : evidently from its possessing less of the bitter principle than the cinchona flava. But when considered merely as a tonic, it seems to me greatly superior in efficacy.

It has been a prevailing opinion, that the bark proves antiseptic only in proportion as it increases the tone and vigour of the stomach ; the tonic power of the system by that means becoming proportionably increased, and thus overcoming the septic state. But even those who have maintained that opinion respecting its *modus operandi*, have at the same time acknowledged, “ that  
“ we are not to suppose its tonic power will  
“ explain its operation in all the diseases  
“ where it is employed with advantage.”

If the mode just alluded to were the only one, by which the most salutary effects are frequently produced in consequence of the

exhibition of bark ; the broad-leaved willow appears to me to possess the property of restoring the tonic power of the stomach and system in general, much more speedily than the cinchona, when given under similar circumstances. Although in general I think the willow preferable to the cinchona, at the same time it ought to be acknowledged, that there are some cases in which the cinchona (especially the flava) claims a superiority over the willow, and which are those, that require a remedy of a more antiseptic quality than the willow appears to possess. The good effects of the willow seem entirely to arise from its tonic property, whilst those of the cinchona are owing to a peculiar modification of tonic and antiseptic qualities. For it is very evident that the astringent, and bitter qualities, are distinct and separate principles, although very often entering into a variety of combinations with each other.

The very accurate experiments made by Dr. Babington, connected with the observations of others, clearly demonstrate the cinchona flava to be much superior in efficacy to either the red, or common bark, and parti-

particularly that it is more antiseptic ; from which circumstance it appears fair to conclude, that that quality resides chiefly in the bitter principle of the bark ; and which the flava possesses in a much greater degree than the other species. Also the various experiments that have been made by Dr. Percival and others, on bitters and astringents, further tend to prove, that the antiseptic virtue is more particularly attached to the bitter principle, than to the astringent.

The idea of the antiseptic quality residing chiefly in the bitter principle, seems countenanced by Dr. Saunders, who on the use of the bile observes, “ it is not improbable but  
 “ that, from its bitterness, it possesses anti-  
 “ septic powers which are peculiarly useful  
 “ in the intestinal canal. And experiments,  
 “ executed with great accuracy and dexterity,  
 “ sufficiently prove that it is less disposed  
 “ to putrify than any other animal fluid ; and  
 “ that it even preserves in a sweet state animal  
 “ substances which, when exposed to  
 “ similar circumstances of fluidity, and heat,  
 “ without the admixture of bile, would in a

“ shorter time have assumed the character of  
 “ putrefaction.”

After all that has been said by different authors on the subject, “ it must be acknowledged, that the astringent and bitter properties of bark do not appear sufficiently to explain its operation, as there are substances in the *Materia Medica* more intensely bitter, and others manifestly more astringent, and yet no person has produced by the combination of these, a remedy possessed of the efficacy which we are accustomed to admire in good bark. It is therefore better to confess our ignorance, and say we are unacquainted with the principles on which its action depends, or that it is a peculiar modification of bitterness with astringency, or with some other principle which we shall never perhaps be able completely to detect.”

I omitted in the proper place to remark, that this bark yields a dark, shining, glutinous extract; which is extremely bitter, and astringent to the taste.

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*Of its Effects in particular Diseases.*

The willow bark decoction has been given with considerable advantage in cases of general debility, accompanied with loss of appetite—Intermittents—Remittents—Mild cases of Typhus—Convalescent state of all Febrile Complaints—Fluor Albus—Prolapsus Uteri.—In short, in all cases where the use of the bark as a tonic is indicated, its exhibition has been attended with much success.

As regular intermittents very seldom occur in this place, there has not been a sufficient opportunity of giving it a full trial, but the few cases in which it has been given, the recurrence of the paroxysms have been stopped much sooner, I think, than if the Cinchona had been exhibited. Fully answering the character given of it by Mr. James, who observes “ It is now more than three years  
“ since I first administered the bark of the  
“ broad-leaved willow in the cure of agues,

“ and intermittent fevers: and from all the  
 “ instances in which I have employed it,  
 “ which have not been a few, from agues  
 “ being frequent in my neighbourhood,  
 “ I have been confirmed in my opinion,  
 “ of its pre-eminence as well over the Peru-  
 “ vian as every other species of bark yet dis-  
 “ covered. I have in some instances admi-  
 “ nistered first the Peruvian, and afterwards  
 “ the bark of the common white willow, in as  
 “ large a dose as the patient’s stomach would  
 “ bear, and that for a considerable length  
 “ of time without being able to remove the  
 “ paroxysm, but on leaving off these medi-  
 “ cines, and having recourse to the decoc-  
 “ tion of the broad-leaved willow, the disor-  
 “ der has soon disappeared.”

“ In short, in all cases of agues and inter-  
 “ mittent fevers, that have come within my  
 “ practice, I have found this bark, without  
 “ a single exception, an infallible remedy,  
 “ and I never give the Peruvian, unless it is  
 “ particularly demanded, or prescribed by  
 “ physicians.”

We find Dr. Cullen has recommended the  
 common white willow as a substitute for the  
 cin-

cinchona in agues. And observes, “ the  
 “ few opportunities we have had of employ-  
 “ ing the salix alba in intermittent fevers,  
 “ shew that it may be, in some cases, an ef-  
 “ fectual remedy. The sensible qualities  
 “ seem to me to be that of a pretty strong,  
 “ but sufficiently agreeable bitter, with some-  
 “ what of stypticity. The qualities persuade  
 “ me that it is a valuable medicine, and as  
 “ promising a substitute for the Peruvian  
 “ bark as any I have known to be offered.”

Dr. Lewis also, in the Appendix to  
 his Materia Medica, published in the year  
 1768, gives the following account of the  
 good effects produced by the common white  
 willow in intermittents. “ The bark of this  
 “ tree has lately been found an useful medi-  
 “ cine in agues, of which many persons  
 “ have been cured by taking a dram of the  
 “ powdered bark every four hours, during  
 “ the intermissions, though in some cases it  
 “ was necessary to join to it a little Peruvian  
 “ bark.”

If such virtues are ascribed to the common  
 willow, which is certainly inferior in efficacy  
 to the broad-leaved species, what greater

advantages then are we not to expect from the latter?

I have had an extensive opportunity of observing the most beneficial effects being produced, in consequence of the exhibition of this bark in febrile complaints, having a tendency to a remission, though not of a regular type, attended with debility.

And in cases of mild typhus, where there is a remission of the febrile symptoms, and the system left in a state of morbid irritability, or inirritability; (according to Dr. Darwin) in which case the pulse still remains weak, small, and quick.

But when fevers assume a putrid, or malignant appearance, as the willow evidently possesses a less antiseptic quality, than the yellow bark; the latter therefore, I think, under such circumstances is justly to be preferred to the former. For although it may seem (to some) more reasonable to refer the action of the cinchona, as an antiseptic to its tonic power on the moving system, than to any action on the animal fluids, yet I am inclined to believe, that it possesses a direct antiseptic property; which does not appear  
refer-

referrible to the willow bark, at least but in a very inferior degree.

With regard to fluor albus, and Prolapsus Uteri; as these cases are in general connected with a debilitated state of the system, it is easy to conceive how the willow has been of so much service in these complaints.

In Scrofula, and Scrofulous Ulcers, its exhibition has likewise been attended with very beneficial effects; in mending the habit in general, lessening, and promoting a healthier discharge from the sores. And Mr. James further observes, “ It is not only in  
“ agues and intermittent fevers, that I have  
“ experienced the excellency of this bark,  
“ and its superiority over the Peruvian: I  
“ have found it alike efficacious, when the  
“ tone or strength of the system has been  
“ suddenly reduced in consequence of large  
“ collections of pus, hæmorrhages, fluor al-  
“ bus, colliquative diarrhœas, &c. as well  
“ as in several scrofulous cases; and in a sin-  
“ gle instance, where the tone of the sto-  
“ mach was so entirely destroyed from hard  
“ drinking, that the patient could not any  
“ one time eat the quantity of half an ounce  
“ of meat.”

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It is scarce necessary to observe, that the exhibition of this bark, as well as the cinchona, is not admissible in cases of acute inflammation. But in mobile temperaments, and which so much predispose to scrofulous affections, and favouring a peculiar kind of inflammation, (so called,) accompanied with a considerable laxity of fibre, it will, on the contrary, be found very serviceable.



